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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MEUCCI, MICHAEL D	
ART UNIT	**PAPER NUMBER**
2142	

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/844,340	TAPPERSON, KEVIN GARY	
	Examiner	Art Unit	
	Michael D Meucci	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *10/29/2004* .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Action is in regards to the Amendment and Request for Reconsideration received on 03 November 2004.

Specification

2. The abstract of the disclosure is objected to because of improper grammar. It is unclear to the examiner what is meant by "An efficient caching mechanism for JAVA RMI remote objects," because it is not grammatically correct. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 1-5, 7-14, 16-17, 20-24, 26-32, 34-35, and 38-39 rejected under 35 U.S.C. 102(b) as being anticipated by Endicott et al. (U.S. 6,047,295) hereinafter referred to as Endicott in view of Wolczko et al. (U.S. 5,900,001) hereinafter referred to as Wolczko.

a. As per claims 1, 20, and 38, Endicott teaches: establishing a connection to a server (lines 33-37 of column 5); maintaining a normal reference to a connection

object for the connection (lines 31-34 of column 1); and periodically destroying connection objects maintained by weak references (lines 24-33 of column 3).

Endicott fails to teach: starting a timer responsive to conclusion of a communication process using the connection. However, Wolczko discloses: "If any card marker was marked the `collect section` process 1080 continues to a `reset timer` procedure 1095 that resets the `count down timer` field 1039 and places the current scavenge operation time in the `last modified time` field 1033 of the section structure 1030," (lines 17-21 of column 27). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to start a timer responsive to conclusion of a communication process using the connection. "Each card is processed by a `process card` procedure 1091 to perform the scavenge related operation on that iterated card. During this processing a flag is set if any card marker in the section is marked. Once all the cards in the iterated section are operated on, the process continues to a decision procedure 1093 that determines whether any card marker in the iterated section was marked," (lines 10-17 of column 27 in Wolczko). It is for this reason that one of ordinary skill in the art at the time of the applicant's invention would have been motivated to start a timer responsive to conclusion of a communication process using the connection in the system as taught by Endicott.

Endicott also fails to teach: maintaining a weak reference to the connection object responsive to conclusion of a predetermined time period. However, Wolczko discloses: "Weak pointers are those that reference nodes without affecting the lifetime of the referenced nodes. The prior art garbage collection techniques implement weak

pointers as direct pointers. Thus, at scavenge time, all freed nodes must be searched to guarantee that no weak pointer reference to a freed node survives the scavenge," (lines 23-29 of column 19). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to maintain a weak reference to the connection object responsive to conclusion of a predetermined time period. "One skilled in the art will understand that the use of links to reference nodes that are or have been in the creation area 601 allows the pointer update portion of the scavenge operation to be interrupted. Thus, real-time systems that cannot absorb the time required to completely update all references to a node copied from the creation area 601 can partially update the references to copied nodes in the available time, without disrupting the real-time nature of the application. As previously described, a link reference to a copied node will be detected and the reference changed to a direct pointer reference to the copied node even during the period that the updating process is interrupted," (lines 8-19 of column 19 in Wolczko). It is for this reason that one of ordinary skill in the art at the time of the applicant's invention would have been motivated to maintain a weak reference to the connection object responsive to conclusion of a predetermined time period in the system as taught by Endicott.

b. As per claims 2 and 21, Endicott teaches: determining whether a normal reference to the connection object exists (lines 43-52 of column 7); and reusing the connection if the normal reference exists (lines 35-47 of column 10).

c. As per claims 3 and 22, Endicott fails to teach: restarting the timer. However, Wolczko discloses: "If any card marker was marked the `collect section`

process 1080 continues to a `reset timer` procedure 1095 that resets the `count down timer` field 1039 and places the current scavenge operation time in the `last modified time` field 1033 of the section structure 1030," (lines 17-21 of column 27). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to restart the timer. "Next the `collect section` process 1080 continues to the iterative procedure 1083 to process the next section. However, if at the decision procedure 1093 no card marker in the iterated section was marked, the `collect section` process 1080 continues to a `decrement timer` procedure 1097 that decrements the value stored in the `count down timer` field 1039," (lines 21-28 of column 27 in Wolczko). It is for this reason that one of ordinary skill in the art at the time of the applicant's invention would have been motivated to reset the timer in the system as taught by Endicott.

d. As per claims 4, and 23, Endicott teaches: determining whether a weak reference to the connection exists (lines 43-47 of column 7); determining whether the connection object has been destroyed if the weak reference exists (lines 47-52 of column 7 and lines 44-47 of column 14); reusing the connection if the connection object has not been destroyed (line 48 of column 10 through line 2 of column 11 and lines 33-50 of column 14).

e. As per claims 5 and 24, Endicott fails to teach: restarting the timer. However, Wolczko discloses: "If any card marker was marked the `collect section` process 1080 continues to a `reset timer` procedure 1095 that resets the `count down timer` field 1039 and places the current scavenge operation time in the `last modified time` field 1033 of the section structure 1030," (lines 17-21 of column 27). It would have

been obvious to one of ordinary skill in the art at the time of the applicant's invention to restart the timer. "Next the `collect section` process 1080 continues to the iterative procedure 1083 to process the next section. However, if at the decision procedure 1093 no card marker in the iterated section was marked, the `collect section` process 1080 continues to a `decrement timer` procedure 1097 that decrements the value stored in the `count down timer` field 1039," (lines 21-28 of column 27 in Wolczko). It is for this reason that one of ordinary skill in the art at the time of the applicant's invention would have been motivated to reset the timer in the system as taught by Endicott.

f. As per claims 7 and 26, Endicott teaches: sending notification to the server that the connection object is unreferenced when a weak reference to the connection object is maintained (line 66 of column 6 through line 15 of column 7).

g. As per claim 8, Endicott teaches: destroying the connection object in response to garbage collection by the server (lines 1-4 of column 2 and lines 46-67 of column 3).

h. As per claims 9-10 and 27-28, Endicott teaches: the client is a client Java Virtual Machine; the server is a server Java Virtual Machine (lines 36-42 and lines 54-62 of column 6).

i. As per claims 11-12 and 29-30, Endicott teaches: the client Java Virtual Machine and the server Java Virtual Machine reside on the same host machine (lines 30-45 of column 5, lines 36-42 and lines 54-62 of column 6).

j. As per claims 13, 31, and 39 Endicott teaches: identifying a weak reference to a connection object for a connection to a server (lines 43-47 of column 7);

determining whether the connection object has been destroyed (lines 47-52 of column 7 and line 44-47 of column 14); reusing the connection if the connection object has not been destroyed (line 48 of column 10 through line 2 of column 11 and lines 33-50 of column 14).

k. As per claims 14 and 32, Endicott teaches: destroying the connection object responsive to garbage collection by the server (lines 46-67 of column 3).

l. As per claims 16 and 34, Endicott teaches: the connection object is a Java object (lines 36-42 of column 6).

m. As per claims 17 and 35, Endicott teaches: the Java object is a remote method invocation object (lines 56-59 of column 5).

5. Claims 6, 15, 25, and 33 rejected under 35 U.S.C. 103(a) as being unpatentable over Endicott and Wolczko as applied to claims 4 and 23 respectively above in view of Official Notice.

Official Notice taken of establishing a new connection if the connection object has been destroyed. A connection object is implicitly *new* if the previous connection object was destroyed. Establishing a new connection if the connection object has been destroyed is very well known in the art at the time of the applicant's invention. It would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to establish a new connection if the connection object has been destroyed in the system as taught by Endicott.

6. Claims 18, 36, and 40 rejected under 35 U.S.C. 103(a) as being unpatentable over Endicott and Wolczko, in view of Geise et al. (U.S. 5,247,520) hereinafter referred to as Geise.

As per claims 18, 36, and 40, Endicott teaches: a hash map (lines 56-59 of column 2).

Endicott fails to teach: starting a timer responsive to conclusion of a communication process using the connection. However, Wolczko discloses: "If any card marker was marked the `collect section` process 1080 continues to a `reset timer` procedure 1095 that resets the `count down timer` field 1039 and places the current scavenge operation time in the `last modified time` field 1033 of the section structure 1030," (lines 17-21 of column 27). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to start a timer responsive to conclusion of a communication process using the connection. "Each card is processed by a `process card` procedure 1091 to perform the scavenge related operation on that iterated card. During this processing a flag is set if any card marker in the section is marked. Once all the cards in the iterated section are operated on, the process continues to a decision procedure 1093 that determines whether any card marker in the iterated section was marked," (lines 10-17 of column 27 in Wolczko). It is for this reason that one of ordinary skill in the art at the time of the applicant's invention would have been motivated to start a timer responsive to conclusion of a communication process using the connection in the system as taught by Endicott.

Endicott also fails to teach: removing the reference to the connection object from the hash map responsive to conclusion of a predetermined time period measured by the timer. However, Wolczko discloses: "However, if the `section R/W status` field 1031 is read-write, the process continues to an iterative procedure 1089 that iterates over each card marker in the portion of the card vector 1011 controlled by the iterated section. Each card is processed by a `process card` procedure 1091 to perform the scavenge related operation on that iterated card. During this processing a flag is set if any card marker in the section is marked," (lines 8-15 of column 27). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to remove the reference to the connection object from the hash map responsive to conclusion of a predetermined time period measured by the timer. "Once all the cards in the iterated section are operated on, the process continues to a decision procedure 1093 that determines whether any card marker in the iterated section was marked. If any card marker was marked the `collect section` process 1080 continues to a `reset timer` procedure 1095 that resets the `count down timer` field 1039 and places the current scavenge operation time in the `last modified time` field 1033 of the section structure 1030. Next the `collect section` process 1080 continues to the iterative procedure 1083 to process the next section," (lines 15-23 of column 27 in Wolczko). It is for this reason that one of ordinary skill in the art at the time of the applicant's invention would have been motivated to remove the reference to the connection object from the hash map responsive to conclusion of a predetermined time period measured by the timer in the system as taught by Endicott.

Endicott also fails to teach: adding a reference to a connection object for a connection to a weak hash map and a hash map. However, Geise discloses: "LCB 62 also contains pointers to two hash tables 76 and 78. Table 76 is an ALS.sub.-- ID hash table, and table 78 is a CONNECTION.sub.-- ID hash table," (lines 64-66 of column 5). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to add a reference to a connection object for a connection to a weak hash map and a hash map. "Each valid entry in both has tables 76, 78 contains a pointer to one VCCB (dashed lines). Each hash table 76, 78 must have at least as many entries as the maximum number of logical links which can be handled simultaneously over the physical link represented by LCB 62," (line 66 of column 5 through line 3 of column 6 and Fig. 5). It is for this reason that one of ordinary skill in the art at the time of the applicant's invention would have been motivated to add a reference to a connection object for a connection to a weak hash map and a hash map in the system as taught by Endicott.

7. Claims 19 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Endicott, Wolczko, and Geise as applied to claims 18 and 36 respectively above, further in view of Weinstein et al. (Google Groups comp.lang.java.databases) hereinafter referred to as Weinstein.

As per claims 19 and 37, Endicott teaches: determining whether the connection object has been destroyed (lines 47-52 of column 7 and lines 44-47 of column 14); removing the reference to the connection object form the weak hash map if the

connection object has been destroyed (lines 56-59 of column 2, lines 24-33 of column 3, and lines 33-50 of column 14).

Endicott fails to teach: maintaining the reference to the connection object if the connection object has not been destroyed to thereby allow use of such connection object by a subsequent communication process between the client and server without establishing a new connection between the client and server. However, Weinstein discloses: "From that driver, the client obtains a JDBC connection object which communicates (only) with the WebLogic Application Server already running in another JVM. This server may already be handling other clients in the same or a different way. This server will be running after this an(d) any other clients have finished and are gone," and "It can either provide JDBC connection pools, or retain a client-specific DBMS connection so a client can retain transactional state during repeated log-ins/outs," (both from page 12 of 16). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to maintain the reference to the connection object if the connection object has not been destroyed to thereby allow use of such connection object by a subsequent communication process between the client and server without establishing a new connection between the client and server. "All this is configurable/alterable by the client using WebLogic extensions to JDBC. The Application Server connection pools can allow JDBC access to 3-tier clients who needn't transmit, know, or find out the DBMS password, or location. In 4.0, client code can create, manage, disable, re-enable, and destroy pools in the middle tier, dynamically. The middle tier and 3-tier driver can communicate via several client-

selectable protocols, including secure protocols that can cross third-party firewalls. The middle tier also provides integrated security for all this.

There we are. Three well defined and physically distinct, independent, separately running tiers. Each providing specific business value added to the JDBC proposition, and WebLogic extensions to JDBC to allow JDBC/T3 clients to configure the behavior of the middle tier with regards to JDBC for the client," (page 12 of 16 in Weinstein). It is for this reason that one of ordinary skill in the art at the time of the applicant's invention would have been motivated to maintain the reference to the connection object if the connection object has not been destroyed to thereby allow use of such connection object by a subsequent communication process between the client and server without establishing a new connection between the client and server in the system as taught by Endicott, Wolczko, and Geise.

Response to Arguments

8. Applicant's arguments filed 03 November have been fully considered but they are not persuasive.

(A) Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

(B) Regarding claim 4, the applicant asserts that Endicott does not teach *determining whether a weak reference to the connection object exists; determining*

whether the connection object ahs been destroyed if the weak connection exists; and reusing the connection if the connection object has not been destroyed.

As to point (B), the examiner respectfully disagrees. Applicant argues that *this (cited) passage merely describes a technique for returning a pointer stored in a weak reference so that information within the object referenced by the weak reference may be obtained by use of such pointer.* Examiner disagrees with this assessment and further adds that this passage teaches the limitations of claim 4 because the connection object of the present invention is merely a pointer to an object. Returning the pointer to the referenced object for the weak reference is clearly disclosed (line 65 of column 10 through line 2 of column 11).

(C) Regarding claim 7, the applicant asserts that Endicott does not teach *sending notification to the server that the connection object is unreferenced when a weak reference to the connection object is maintained.*

As to point (C), the examiner respectfully disagrees. Applicant argues that *this cited passage does not describe any type of server co-action technique, and in particular does not describe a step sending of a notification to a server that the connection object is unreferenced when a weak reference to the connection object is maintained.* Since Endicott has previously established operation/use of applications, programs, objects, modules, etc. across a distributed environment (line 46 of column 5 through line 14 of column 6; see also Fig. 1), thereby assuring utilization of a

client/server, the status of all pointers must be known to the server since the server is what maintains the connections across the distributed environment.

(D) Regarding claim 8, the applicant asserts that Endicott does not teach *wherein the step of periodically destroying connection objects maintained by weak reference comprises destroying the connection object in response to the garbage collection by the server.*

As to point (D), the examiner respectfully disagrees. Applicant argues that *this (cited) passage describes a selective access inhibition technique for internal garbage collection by a computer.* Examiner contends that the garbage collection as disclosed in Endicott clearly demonstrates periodicity since it is cyclical (line 48 of column 1 through line 14 of column 2) and deletes the pointers to objects (lines 1-4 of column 2), thus destroying the connection object in response to garbage collection.

(E) Regarding claims 6 and 25, Endicott in view of Official Notice was used as a basis for rejection under 35 U.S.C. 103(a).

As to point (E), no arguments have been made for traversing this rejection that have not already been rebutted above with respect to claims 1 and 4 which are moot in view of new grounds of rejection.

(F) Regarding claims 15 and 33, applicant asserts that *none of the cited references teach or suggest conditional reuse of a connection if a connection object has been destroyed.*

As to point (F), In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *conditional reuse of a connection*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The examiner agrees that Endicott does not teach this limitation. However, Official Notice was taken of establishing a new connection if the connection object has been destroyed. A connection object is implicitly *new* if the previous connection object was destroyed. Creating a new connection object is very well known in the art albeit done by manual reconnection or automatic reconnection. Any general computer with access to the Internet likely will attempt to reconnect upon notification of a lost connection. Therefore, it is obvious to combine the limitation establishing a new connection if the connection object has been destroyed in the system as taught by Endicott.

(G) Applicant's arguments with respect to claims 18, 36, and 40 have been considered but are moot in view of the new ground(s) of rejection.

(F) Applicant's arguments with respect to claims 19 and 37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Graybill et al. (U.S. 5,371,499) discloses data compression using hashing.

Nilsen et al. (U.S. 5,560,003) discloses system for incremental real time garbage collection and memory management.

Gish (U.S. 5,768,510) discloses object-oriented system for a client-server application enabler system and connection objects.

de la Salle (U.S. 5,878,420) discloses network monitoring and management system, connection objects and hashing.

Knippel et al. (U.S. 5,903,900) discloses method for optimizing exact garbage collection of array nodes in a carded heap.

Schwartz et al. (U.S. 5,911,144) discloses method for optimizing the assignment of hash values to nodes residing in a garbage collected heap.

Schwartz et al. (U.S. 5,915,255) discloses method for referencing nodes using links.

Ungar et al. (U.S. 5,920,876) discloses performing exact garbage collection using bitmaps that identify pointer values within objects.

Colie et al. (U.S. 6,006,268) discloses method for reducing overhead on a proxied connection.

Schwartz et al. (U.S. 6,038,572) discloses method for localizing nodes in a garbage collected carded heap.

Craig (U.S. 6,108,687) discloses system for providing a synchronized display to a plurality of computers over a global computer network.

Wolczko et al. (U.S. 6,115,782) discloses method for locating nodes in a carded heap using a card marking structure and a node advance value.

Shilts et al. (U.S. 6,237,060 B1) discloses cache management techniques and connection objects.

Loen (U.S. 6,438,560 B1) discloses reuse of immutable objects during objection creation.

Wollrath et al. (U.S .6,598,094 B1) discloses method for determining status of remote objects in a distributed system.

Santosuosso et al. (U.S. 6,701,520 B1) discloses preventing garbage collection of objects in object oriented computer programming languages.

Bloch (U.S. 6,820,261 B1) discloses inheritable thread-local storage.

Bagguley et al. (Google Groups comp.lang.java.help) discloses weak hashmap usage.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Meucci at (571) 272-3892. The examiner can normally be reached on Monday-Friday from 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Harvey, can be reached at (571) 272-3896. The fax phone number for this Group is (703) 872-9306.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [michael.meucci@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).